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## The Availabilty of Indole Derivatives for Supplementing Diets Derivatives in Tryptophane

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The influence of whole liver does not reside in its protein or fat content since growth and lactation were not aided by supplementing the extracted liver diet of a like number of animals with fat free liver or liver fat equivalent to 0.5 g. of whole dried liver.

A water-alcohol soluble ether insoluble fraction of the liver led to no improvement of the basal diet. A water insoluble ether insoluble fraction fed in amounts equivalent to two grams of raw liver (12.5 mg. daily) is giving conclusive results. Material prepared according to the method described by Mapson<sup>2</sup> has been tested, and found to be somewhat active.

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## SOME PROPERTIES OF VITAMIN E CONCENTRATES

H. S. OLCOTT

Preparations of vitamin E were obtained from lettuce and from wheat germ oil by fractional crystallizations of the unsaponifiable lipids. Still further concentrated fractions were obtained from the lettuce unsaponifiable lipids by fractional distillation in vacuo. The fraction collected from 190-220° (0.1 mm.) was the most active. After the removal of traces of sterols and other solid alcohols by crystallization from acetone, 10 mg. were sufficient, when fed to a female rat deficient in vitamin E, to allow the birth of a normal litter. Concentrates so obtained were resin-like material which would not crystallize. Some of the physical and chemical properties were determined. The vitamin is not destroyed by acetylation, benzoylation, or mild hydrogenation but is destroyed by bromination.

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## THE AVAILABILITY OF INDOLE DERIVATIVES FOR SUPPLEMENTING DIETS DEFICIENT IN TRYPTOPHANE

LYLE C. BAUGUESS AND CLARENCE P. BERG

Interest in the possibility of replacing essential amino acids in

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<sup>2</sup> Mapson, L. W., *Biochem. J.* 26, 970 (1932).

the diet with synthetic products more or less closely related in chemical structure has led us to synthesize  $\beta$ -3-indoleacrylic acid and  $\alpha$ -oximino- $\beta$ -3-indolepropionic acid and feed them to rats in conjunction with a diet deficient in tryptophane. Reports in the literature on the availability of  $\beta$ -4-imidazoleacrylic acid in supplementing diets deficient in histidine are conflicting. No  $\alpha$ -oximino acid has been studied in this connection. The oxime of pyruvic acid, however, has been shown to undergo reduction, in the presence of vigorously fermenting yeast, to alanine.

The  $\beta$ -3-indoleacrylic acid was prepared by condensing  $\beta$ -3-indolealdehyde with malonic acid in the presence of pyridine and piperidine; the  $\alpha$ -oximino- $\beta$ -3-indolepropionic acid by condensing  $\beta$ -3-indolepyruvic acid with hydroxylamine. Neither product showed any capacity to replace tryptophane for purposes of growth under the experimental conditions employed.

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## CONDENSATION OF VANILLIN SUBSTITUTION PRODUCTS WITH METHYLENE DERIVATIVES

L. CHAS. RAIFORD AND DONALD E. FOX

Some compounds containing a methylene group adjacent to certain activating radicals will interact with the carbonyl radicals of aldehydes and ketones. These condensations seem to depend chiefly on (a) the nature of substituents in the starting materials, and (b) the character of the condensing agents.

The study of this reaction has been extended by the use of the vanillin substitution products that have been synthesized in this laboratory within the past few years. These aldehydes have been condensed with nitromethane, where it was found that ammonium acetate dissolved in glacial acetic acid is a suitable condensing agent. In order to learn the behavior of a methyl group attached to a cyclic structure, nitromethane was replaced by 2, 4-dinitrotoluene. Here piperidine was found to be the most suitable condensing agent. Further work is in progress.

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